SUNPOWER®

Polarisation and Positive Earthing/Grounding - **FAQ**

What is Polarisation?

Polarisation is a build-up of charge that may occur on the front of a solar cell.
Most solar technologies polarise to some extent, however it is more pronounced in SunPower modules as a side-effect of our back-contact technology.

What is the effect of polarisation on a solar module?

If not installed correctly, SunPower solar modules may slowly develop a loss in power output. This could be up to a 30% reduction in maximum output.

Is polarisation permanent?

The effect is not permanent, and can be reversed by correct installation.

Does polarisation damage the solar module?

Polarisation does not damage the solar modules.

Should I be concerned about polarisation?

Earthing in itself should not cause you concern, it is merely an installation requirement for our product. There a number of PV products in the market that have similar side effects and require DC earthing. Some major brands of thin film panels, for instance, require a negative earth connection.

How do I install SunPower modules correctly?

- We strongly recommend you install either an SMA inverter or a Fronius inverter with your SunPower system. These inverters must have a transformer, so that the DC and AC are isolated. Both these inverters are available directly from SunPower.

  2a. If installing an SMA inverter, it must have a positive earth kit included. Ensure that this is installed correctly inside the inverter (see the accompanying instruction manual with the positive earth kit).

  2b. If installing a Fronius IG inverter, a connection from DC positive to earth is made, usually inside the isolation enclosure.

More details can be found on both of these installation methods in our 'SunPower Polarisation Handbook', which is available on request from your Regional Sales Manager or our technical support team.

What happens if I go back to an incorrectly installed polarised system and make this positive earth connection?

The positive to earth connection will pull away the negative charge on the front of the cells, with the panels de-polarising over the next few days. Between 5 and 10 days should be adequate, at which time their output should return to normal levels.

Should I earth the frame of the panels?

In most cases this is not necessary. However, you should consult Australian Standard AS/NZS 5033:2005, pg 30 to determine if a system frame should be earthed. This is generally a function of the lightning a given region receives over the course of a year.

Can I install a transformerless inverter with a SunPower module?

No. It is dangerous to make a DC connection to earth without galvanic isolation, thus a transformer is required.

I am concerned about the positive earthing method that you recommend with Fronius IG inverters, namely the hard earth connection between positive and earth, and the removal of the warning message that appears on the Fronius inverter.

Although we understand your concerns, the method we propose is in line with AS/NZS 5033:2005 (pg 28) figure 5.7; Table 2.5 (pg18); and clause 5.4 (pg 29) - assuming the system is installed correctly.

When a connection like this is made between positive and earth, the Fronius IG inverter senses values in ground insulation outside of its measurement window, and will then flash a warning message continuously. This warning message may be disabled by the process outlined in the 'SunPower Polarisation Handbook.' This method is recommended by Fronius, when installing their inverters with SunPower modules.

Where do I go for further information?

If you would like more information about our recommended installation process or a PDF copy of our handbook, please contact a SunPower Technical Support Engineer on 1800-SUNPOWER.